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The Future of Software Copyright Protection: Arbitration v. Litigation

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by
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Introduction

With the global evolution of the computer industry,[1] litigation concerning copyright protection for computer programs has dramatically increased.[2] Historically, the copyright laws were designed to protect the original expression of ideas embodied in literary works, works of art, mu-

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1. *See* THE INFORMATION TECHNOLOGY INDUSTRY DATA BOOK 52 (1989) [hereinafter CBEMA DATA BOOK] ("During 1987, the European Economic Community (EEC) again purchased the largest share of U.S. computer and business equipment industry exports. Exports to the EEC amounted to $9.2 billion . . . . The fastest growing markets for [U.S. computer and business equipment] industry exports between 1980 and 1987 were the Far East, the rest of North America, and Australia and Oceania with 20.3%, 16.4%, and 16.2% average annual growth, respectively.").

2. Computer manufacturers and programmers have eagerly sought copyright as their primary source of legal protection since the protection afforded under the Copyright Act is so expansive, providing the author with the exclusive right to reproduce, adapt, publish, perform, and display his work. Chandler, *Proprietary Protection of Computer Software*, 11 U. BALT. L. REV. 195, 214 (1982). However, computer programmers may also seek legal protection for their work under the alternative forms of intellectual property laws such as patent, trade secret, and trademark. These alternatives, however, are not the subject of this Article and are therefore not discussed. For further readings regarding federal patent protection for computer programs, see, *e.g.*, Moskowitz, *The Metamorphosis of Software-Related Invention Patentability*, 3 COMPUTER L.J. 273, 280-85 (1982); J. SOMA, COMPUTER TECHNOLOGY AND THE LAW §§ 2.03-.04 (1983); Davidson, *Protecting Computer Software: A Comprehensive Analysis*, 23 JURIMETRICS J. 337, 348-59 (1983); 1 D. BENDER, COMPUTER LAW § 3.01 (1988).

For further readings on the application of common law and state statutory trade secret laws to computer software, see, *e.g.*, R. WHITESEL, UNIFORM TRADE SECRETS ACT (1984); Gilburne & Johnston, *Trade Secret Protection for Software Generally and in the Mass Market*, 3 COMPUTER L.J. 211, 216 (1982); Bender, *Trade Secret Software Protection*, 3 COMPUTER L. SERV. (1977); G. DAVIS, SOFTWARE PROTECTION, 142-61 (1985); Note, *Patentability of Computer Programs*, 27 U. MIAMI L. REV. 494 (1973); Comment, *Patentability: Piecing Together the Computer Software Patent Puzzle*, 19 ST. LOUIS U.L.J. 351 (1975).

For further reading on the use of trademark protection for computer programs, see, *e.g.*, DAVIS, *supra*, at 162-86; A. MILLER & G. DAVIS, INTELLECTUAL PROPERTY: PATENTS, TRADEMARKS, AND COPYRIGHT 1-2 (1983); Chandler, *supra*, at 195, 213-15 (1982).

sic, and artistic performance.[3] However, in this age of high technology, the copyright laws have been amended to extend, at best, strained protection to computer programs as literary works.[4] Although these laws are clearly intended to apply to computer programs,[5] the morass of litigation over computer copyright demonstrates that current copyright law, coupled with traditional litigation as its method of enforcement, does not provide adequate protection to works as complex as computer programs.[6]

Prior to the Copyright Act of 1976,[7] computer programs were considered ineligible for copyright protection.[8] With the passage of the Copyright Act, computer programs were still not expressly included within the scope of federal protection.[9] However, the proliferation of computers in the international marketplace, combined with the growing recognition of the need for legal protection for computer programs[10] and

3. 17 U.S.C. § 102(a) (1989). *See also* Conley & Bryan, *A Unifying Theory for the Litigation of Computer Software Copyright Cases*, 6 COMPUTER L.J. 55, 65 (1985).

4. *See generally* Menell, *Tailoring Legal Protection for Computer Software*, 39 STAN. L. REV. 1329 (1987); Kaufman, *Copyrighting Object Code: Applying Old Legal Tools to New Technologies*, 4 COMPUTER L.J. 421 (1983). *See also* HOUSE COMM. ON THE JUDICIARY, NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT 3 (1979) [hereinafter CONTU FINAL REPORT].

5. The legislative history of the Copyright Act of 1976 suggests that computer programs could be regarded as an extension of copyrightable subject matter Congress had already intended to protect, and were thus considered copyrightable from the outset without the need of new legislation. H.R. REP. NO. 1476, 94th Cong., 2d Sess. 54 (1976), *reprinted in* 1976 U.S. CODE CONG. & ADMIN. NEWS 5659, 5667 (" '[L]iterary works' . . . includes . . . computer programs to the extent they incorporate authorship in the programmer's expression of original ideas, as distinguished from the ideas themselves."). However, contrary to this suggestion, the Copyright Act does not expressly list computers as works of authorship. 17 U.S.C. § 102(a) (1989). Moreover, Congress specifically stated that in drafting the 1976 Act "it did not address or deal with computer issues." CONTU FINAL REPORT *supra* note 4, at 7 (citing 17 U.S.C. § 117 and H.R. REP. NO. 1476, *supra*). *See also id.* at 9; Miller, *Silicon Court: High-Tech World Sees IBM Case as Way Out of the Copyright Maze*, Wall St. J., Sept. 18, 1987, at 1, col. 6 ("Current copyright law was never intended to apply to machines as complex as computers," quoting R. Hinkley, attorney for NEC Corp.).

6. Coy, *IBM-Fujitsu Order Exposes Morass of Software Copyright Law*, Associated Press, Oct. 19, 1987, Business News Section ("The decisive action announced Tuesday [in the IBM/Fujitsu arbitration] contrasted conspicuously with the legal morass that has enveloped the field of computer software copyrights."). *See generally* Comment, *Copyright Protection for Programs stored in Computer Chips: Competing with IBM and Apple*, 7 HAMLINE L. REV. 103 (1984); Miller, *Silicon Court: High-Tech World Sees IBM Case as Way Out of Copyright Maze*, Wall St. J., Sept. 18, 1987, at 1, col. 6.

7. 17 U.S.C. §§ 101-914 (1989).

8. *See* Chandler, *supra* note 2, at 215 ("The first deposit of a computer program for copyright registration was made on November 30, 1961, but it was not until 1964 that the Register of Copyrights decided computer programs could be accepted for registration.").

9. The Copyright Act of 1976 does not expressly list computer programs as works of authorship. 17 U.S.C. § 102(a) (1989).

10. Chandler, *supra* note 2, at 195.

the influence of giant conglomerates running the industry, made amendments to the Copyright Act inevitable.[11] In 1980, Congress passed the Computer Software Act,[12] providing a working definition for computer programs within the Copyright Act and explicitly granting computer programs the sole statutory exception from the normal proscriptions against copying.[13] In 1984, Congress also passed the Semiconductor Chip Protection Act, creating a new form of copyright protection for intellectual property embedded in semiconductor chips.[14] Recently, the United States joined the Berne Convention, an international multilateral copyright treaty, which affords U.S. software firms equitable legal protection in seventy-seven other signatory nations.[15]

Despite these congressional attempts to provide adequate legal protection to computer programs, disputes continue to arise due to the complexity of various types of programs and their ready availability to copying.[16] The protection extended by existing copyright law has simply not been satisfactory.[17] Moreover, the traditional method of enforcing copyright protection of computer programs through litigation has received severe criticism from the computer industry and the legal commu-

11. In 1974, Congress created the National Commission on New Technological Uses of Copyrighted Works (CONTU) to assist in its effort to comprehensively revise the copyright laws. CONTU FINAL REPORT, *supra* note 4, at 1. CONTU's primary objective was to develop and recommend a national policy that would provide "adequate legal protection for intellectual work embodied in new technologies while ensuring public access to those new technologies." Menell, *supra* note 4, at 1329 (citing CONTU FINAL REPORT, *supra* note 4, at 3). Based on CONTU's majority recommendations, Congress passed the Software Act of 1980. Pub. L. No. 96-517, §§ 10(a), 10(b), 94 Stat. 3015, 3028 (1980).

12. Pub. L. No. 96-517, 94 Stat. 3015, 3028 (codified as amended at 17 U.S.C. §§ 101, 117 (1989)).

13. 17 U.S.C. §§ 101, 117 (1989).

14. Pub. L. No 98-620, 98 Stat. 3347 (codified at 17 U.S.C. §§ 901-14 (1989)). *See* Menell, *supra* note 4, at 1353 ("In 1984, Congress enacted legislation establishing a new category of legal protection for intellectual work embodied in semiconductor chips (mask works). Since computer software may be fixed in such works (e.g., the fixing of object code in ROMs), the Semiconductor Chip Protection Act (SCPA) provides yet another means by which programmers may protect the intellectual work contained in computer software.").

15. The Copyright Act was amended to conform to the Berne Convention by the Berne Convention Implementation Act of 1988, which took effect on March 1, 1989, the date the United States was scheduled to join the Berne Convention. Pub.L. 100-568, 102 Stat. 2857, 2861 (codified as amended at 17 U.S.C. §§ 101-914).

16. *See* Comment, *Copyright Protection for Programs Stored in Computer Chips: Competing with IBM and Apple*, 7 HAMLINE L. REV. 103, 108 (1984) ("Once stored in ROM [read only memory] the copyright on the program may be infringed by causing the computer to print out the contents of the ROM, by printing out the contents of the ROM with a development machine, or by transferring the contents of the ROM to another ROM through the use of a computer or ROM duplicator."); DAVIS, *supra* note 2, at 56.

17. *See generally* Menell, *supra* note 4; Program, *Decompilation and Disassembly: Undoing Software Protection*, COMPUTER LAW., Feb. 1984, at 1, 2.

nity.[18] The costs of litigating a computer copyright infringement case are staggering and the remedies available are seldom effective.[19] Additionally, the courts continue to apply simplistic copyright principles in complex computer contexts where the factfinder is usually unfamiliar with the technology he is examining. The recent NEC/Intel lawsuit[20] illustrates how poorly traditional litigation is suited to handle complex copyright disputes over new technology.

This article addresses the limitations of traditional litigation in the context of complex computer copyright disputes. Section I provides a brief synopsis of existing copyright law and the statutory remedies available to successful copyright litigants. It also sets forth the elements necessary in proving an infringement case and identifies the costs inherent in maintaining such an action. It then analyzes the recent decision and protracted litigation of *NEC Corp. v. Intel Corp.*[21] Section II discusses the "hybrid" form of private, informal arbitration developed during the IBM/Fujitsu settlement,[22] which granted unprecedented powers to the arbitrators to resolve not only past and present disputes between the parties but any future conflicts which might arise. Section III analyzes this "hybrid" arbitration method and compares it to the traditional form of litigation exemplified in the NEC/Intel lawsuit. Finally, in Section IV, this Article concludes that traditional dispute resolution under existing copyright laws in the context of complex computer technology is inadequate and that the new "hybrid" form of arbitration is a viable alternative to litigation, providing realistic and effective remedies for the participants while ensuring that the public interest is protected.

I

Traditional Dispute Resolution: Litigation Warfare

A. Existing Copyright Protection

Under the Copyright Act of 1976,[23] protection is provided to all "[o]riginal works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid

18. *See* Coy, *supra* note 6.

19. *See generally* Menell, *supra* note 4; DAVIS, *supra* note 2.

20. This lawsuit culminated in NEC Corp. v. Intel Corp., No. C-84-20799-WPG (N.D. Cal. Feb. 6, 1989) (LEXIS, Genfed libary, Dist. file), 10 U.S.P.Q. 2d (BNA) 1177 (Apr. 17, 1989).

21. *Id.*

22. International Business Machines Corp. v. Fujitsu Ltd., No. 13T-117-0636-85, Am. Arb. Ass'n Commercial Arb. Tribunal Opinion p.1, Sept. 15, 1987 (Mnookin & Jones, arbs.).

23. 17 U.S.C. §§ 101-914 (1989).

of a machine or device."[24] Although computer programs are not explicitly listed among the works of authorship encompassed by the Copyright Act,[25] the definitional section of the statute was amended to include computer programs when Congress passed the Software Protection Act of 1980.[26] The 1980 amendments also provide a special exception for computer programs to the normal proscriptions against copying.[27]

By passage of the Software Protection Act, Congress expressly extended copyright protection to computer programs. However, due to the complexity of programming and the simplicity of the 1980 amendments, the courts remained confused as to the scope of such protection to particular types of programs.[28] The primary source of confusion focused on the distinctions between application programs and operating system programs.[29] Not until *Apple Computer, Inc. v. Franklin Computer Corp.*[30] did the federal courts agree that computer programs in any form, fixed in

24. 17 U.S.C. § 102(a) (1989).

25. As statutorily defined, "A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." 17 U.S.C. § 101 (1989).

26. 17 U.S.C. § 117 (1989).

27. *Id. See also* Menell, *supra* note 4, at 1347. The 1980 software exception in the amended Copyright Act provides that it is not an infringement for the owner of a copy of a computer program "to make or authorize the making of another copy or adaptation of that computer program" if a copy is necessary for "the utilization of the computer program" or "for archival purposes only." 17 U.S.C. § 117 (1989). The software exception further permits "any exact copies" to be "leased, sold, or otherwise transferred" but "only with authorization from the copyright owner." *Id.*

28. For example, in Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983), *cert. denied*, 464 U.S. 1033 (1984), the Third Circuit noted the trial court's confusion in applying copyright law to computer programs:

> It is difficult to discern precisely why the district court questioned the copyrightability of the programs at issue. There is no finding, statement, or holding on which we [the appellate court] can focus which clearly sets forth the district court's view. Throughout the opinion the district court referred to the "complexity of the question presented by the present case," . . . and the "baffling" problem at issue.

Id. at 1246.

For further readings which provide more in-depth discussion and analysis of the decisional history concerning the scope of copyright protection for computer programs, *see* Comment, *supra* note 16, at 103; Rodau, *Protecting Computer Software: After Apple v. Franklin, Does Copyright Provide the Best Protection?*, 57 TEMP. L.Q. 527 (1984); Conley & Bryan, *supra* note 3, at 55.

29. *See Apple Computer, Inc. v. Franklin*, 714 F.2d 1240. An operating system is a program which manages the internal functions of a computer, coordinating the reading and writing of data between the internal memory and external devices (*e.g.*, disk drives, keyboard, printers), as well as performing simple housekeeping functions for the computer. *Id.* at 1243. Primarily, an operating system prepares and assists the computer in executing application programs. *Id.* Application programs, on the other hand, perform a wide range of data processing tasks for the computer user, including bookkeeping, word processing, data processing, and even video games. Menell, *supra* note 4, at 1334.

30. 714 F.2d 1240 (3d Cir. 1983), *cert. denied*, 464 U.S. 1033 (1984).

any medium, fall within the scope of the Copyright Act.[31] Only recently have microcodes, programs embedded on semiconductor chips, been recognized as protectible forms of computer programs under the copyright laws.[32]

The author of a copyrightable program, that is, a program constituting an original work of authorship fixed in a tangible medium, is granted the exclusive right to the use of that program.[33] He receives the sole right to reproduce the copyrighted program in any format or medium, to prepare derivative works based on the copyrighted program, and to distribute copies of the copyrighted program to the public by sale or other transfer of ownership, rental, lease, or loan.[34] Copyright in a program subsists at the time of its creation and endures for the life of the author plus fifty years.[35] Copyright law, however, protects the form in which the idea is expressed, not the idea itself.[36]

The statutory remedies available to the author of a copyrightable program are expansive. If the author establishes that the program has been copied without his consent, he may seek an immediate preliminary injunction, and ultimately, a permanent injunction to restrain infringers from violating his rights.[37] The author may also seek a court order impounding all infringing reproductions of the program while the infringement suit is pending, and, upon its conclusion, obtain an order destroying the infringing copies as part of the final judgment.[38] Further, the copyright holder may recover actual damages for lost profits as well as any additional profits realized by the infringer during the course of his unauthorized use of the program.[39] Alternatively, he may elect to recover statutory damages, ranging from $500 to $20,000 in ordinary infringement cases, and up to $100,000 in the case of willful infringement.[40] The court has the discretion to award costs and reasonable attorneys' fees to the infringed party.[41] Attorney fees and statutory damages, however, may not be recovered where infringement occurs prior to registration of the copyright, unless it was registered within three

31. *Id.* at 1247-54; Comment, *supra* note 16, at 120.

32. NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1178 (microcode is copyrightable). However, this ruling was made by a federal trial court and is not binding authority upon other courts.

33. 17 U.S.C. § 106 (1989).

34. *Id.*

35. *Id.* § 302(a).

36. *Id.* at § 102(b).

37. *Id.* at § 502.

38. *Id.* at § 503.

39. *Id.* at § 504(b).

40. *Id.* at § 504(c).

41. *Id.* at § 505.

months of its initial distribution.[42] Additionally, criminal sanctions are available in cases involving willful infringement and fraudulent removal of copyright notice, carrying fines of up to $50,000 and a two-year maximum imprisonment.[43]

Although the statutory remedies may be extensive, they usually are ineffective due to the high rate of obsolescence in the computer industry.[44] In 1987, the U.S. computer industry spent approximately $1 billion on the research and development of software alone.[45] It is estimated that in 1987 the U.S. computer and business industry spent over $13 billion on research and development overall.[46] Hence, by the time a final judgment is rendered in a complex computer copyright case, the software at issue is usually antiquated or displaced by new generations of the product.

In any event, before statutory remedies can apply, the copyright holder must successfully prosecute an infringement suit. To do so, the copyright holder must establish two basic elements: the validity of the copyright and the existence of copying.[47] With respect to the former, a copyright is considered valid if the work falls within the scope of subject matter defined by the Copyright Act.[48] As noted earlier, the federal courts currently recognize that all forms of computer programs are subject to copyright protection.[49]

Although copyright registration is not a prerequisite to copyright protection of a program, it is required to maintain an infringement suit.[50] At the time of litigation, registration of the program's copyright provides prima facie evidence of its validity and shifts the burden of proof to the defendant.[51] An author of a copyrighted computer program, however, may forfeit its protection if he fails to place notice of such copyright on

42. *Id.* at § 412.

43. *Id.* at § 506.

44. *See* Sieg, *Court Ruling Good News for NEC and Intel*, Reuters, Feb. 8, 1989, Financial Report Section.

45. CBEMA DATA BOOK, *supra* note 1, at 43.

46. *Id.*

47. *See* NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1183; Conley & Bryan, *supra* note 3, at 75 (citing 3 M. NIMMER, NIMMER ON COPYRIGHT § 13.03[A][1] (1984)). Damages must also be proven in order to successfully litigate a copyright infringement case; however, this element is generally not difficult to establish since the computer program at issue is usually the plaintiff's product and therefore is a valued business asset. Conley & Bryan, *supra* note 3, at 75 (citing *Software Rentals: Piracy is the Hot New Issue*, BUS. WK., Aug. 1, 1983, at 90-91, which discusses the economic value of software and the financial threat of illegal copying through rentals).

48. 17 U.S.C. § 102(a) (1989).

49. *See supra* notes 25-29 and accompanying text.

50. 17 U.S.C. § 411(a) (1989).

51. *Id.* at § 410(c).

more than a "relatively small number" of copies which are publicly distributed.[52]

The majority of decisions concerning computer copyright have focused primarily on the first element, whether the computer program at issue was subject to copyright protection.[53] Relatively few decisions have been published that define a standard for determining the second element, whether a computer program has actually been copied.[54] This is generally due to the fact that most defendants have admitted to copying in nearly all cases.[55] It is also probably the result of the court's reluctance or inability to engage in a technical analysis of computer technology because of its general unfamiliarity with the medium.

A prima facie case of copying can be established by showing that the alleged infringer had access to the copyrighted program and that the alleged infringing program is "substantially similar" to the copyrighted program.[56] Access is generally not difficult to demonstrate since the defendant is usually a purchaser or licensee of the copyright holder's program, and, in some cases, access is presumed where the program is readily available on the market.[57] Proving substantial similarity, however, presents a predicament for the courts since they must endeavor to unravel the intricacies of computer technology in order to compare the two programs and make a knowledgeable decision.

In determining whether substantial similarity exists, the courts generally rely on the "ordinary observer" test.[58] Whether this standard is appropriate in the context of computer copyright has been the subject of much criticism.[59] It is argued that although this standard is proper in cases involving simple literary works, it is difficult, if not impossible, to apply these general copyright principles in computer infringement suits.[60] This is primarily because an ordinary lay observer is often incapable of comparing computer programs.[61] It is particularly difficult to

52. *Id.* at § 401(a).

53. Comment, *supra* note 16, at 106-07, 109 ("[C]ourt decisions tend to view copyright issues primarily as a definitional exercise.").

54. Chandler, *supra* note 2, at 228.

55. Comment, *supra* note 16, at 107.

56. *See* Conley & Bryan, *supra* note 3, at 79 & n.159.

57. *Id.* at 76 & n.144 ("Direct evidence of copying, by admission or eyewitness testimony, is often unavailable. Thus, courts have long allowed copying to be proved circumstantially by showing access to the infringed work and substantial similiarity . . . .").

58. *Id.* at 77-84.

59. *Id.* at 77-78. *See also* Whelan Assoc. v. Jaslow Dental Laboratory, 797 F.2d 1222, 1232-33 (3rd Cir 1986), *cert. denied*, 479 U.S. 1031 (1987).

60. Conley & Bryan, *supra* note 3, at 78.

61. *Id.*

determine whether substantial similarities exist in the two complex forms of program language, known as source and object code.

Relative to proving substantial similarity, courts have also struggled with the application of the "idea/expression dichotomy" in the context of computer copyright.[62] This doctrine provides that only the expression of an idea may be subject to copyright, not the idea itself.[63] Merger of idea and expression may be established by showing that there are only a limited number of ways in which the idea may be expressed. Where the "underlying ideas are capable of only a limited range of expression, they 'may be protected only against virtually identical copying.' "[64] When the idea and its expression merge, becoming inseparable, copying the expression is not considered infringement since "protecting the 'expression' would confer a monopoly of the 'idea.' "[65] Where merger exists, a finding of substantial similarity will be precluded.[66]

Hence, the prosecution of a complex computer copyright case can strain even the most astute litigator. The courts' inflexible application of general copyright principles to computer infringement cases places the burden upon the parties to educate the factfinder and work around the inadequacies of existing copyright law. It is no wonder that computer copyright cases take several years to reach final judgment.

Although copyright plaintiffs are estimated to prevail seventy percent of the time,[67] the cost of maintaining an infringement suit is extraordinarily prohibitive. Legal fees for complex copyright disputes are substantial, ranging in the hundreds of thousands, and sometimes millions, of dollars.[68] Out-of-pocket costs in such litigation are also staggering since the services of computer and legal experts are required to interpret the evidence for the judge and jury. Since the judge and jury are usually unfamiliar with even the basics of computer technology, let alone the complexity and nuances of individual programs, education of the trier of fact is essential to the success of a computer infringement

62. *See* Comment, *supra* note 16, at 105; 3 M. NIMMER, NIMMER ON COPYRIGHT § 13.03[A] (1984).

63. 17 U.S.C. § 102(b) (1989); 3 M. NIMMER, *supra* note 62, at § 13.03[A].

64. NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1188 (quoting Judge Browning in H. Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738, 742 (9th Cir. 1971)).

65. *Id.*

66. 3 M. NIMMER, *supra* note 62, at § 13.03[A].

67. Chandler, *supra* note 2, at 229 & nn.249, 251.

68. *See* DAVIS, *supra* note 2, at 317-18. Generally large computer firms retain in-house counsel as well as regular outside intellectual property and litigation counsel. The firms of Intel Corp., NEC Corp., IBM and Fujitsu Ltd. are no exception. The outside legal counsel which they retained in their disputes were from well-established law firms that bill their clients fees commensurate for their services. Considering the time involved for investigation, discovery, preparation of pleadings and court appearances, and computer expert consultations, it is clear that the legal fees are substantial, probably ranging in the millions of dollars.

action.[69] Additionally, the time expended by the copyright holder and other company personnel during litigation may cost the firm millions of dollars in lost research and development, new innovations, and revenues in marketing the software.[70]

In the event the copyright holder is unsuccessful in his infringement action, he may be further compelled to pay not only his legal fees but also the court costs incurred by the defendant in defending the suit.[71] In the rare case, a copyright holder may also be held responsible for the defendant's attorneys' fees, if his claims are considered by the court to be unreasonable or meritless.[72]

These prohibitive costs are exacerbated by the amount of time which is required to litigate a complex computer copyright dispute. While the usual copyright infringement case involving simple literary works can be tried within a few days, complicated software disputes may take up to six months just to obtain a hearing date for a motion on a preliminary injunction.[73] It is not uncommon for such cases to take several years to conclude and even then a successful litigant may be forced back into court on appeal or to enforce its rights against subsequent infringers.

In addition to the private costs born by the software copyright holder in protecting his intellectual property rights, it has been suggested that society bears considerable costs attributable to the legal protection afforded computer programs.[74] Such costs include the loss of new innovations due to monopolistic exploitation of intellectual property by a few dominant firms, the administrative costs of documenting all software development to prove originality and lack of copying, the legal costs of keeping abreast of the current legal status of computer copyright, and the cost of attorneys' fees for enforcing those legal rights.[75] All these costs are ultimately born by the consumer.

While the courts struggle to define computer copyright law, debate continues among legal commentators and practicing copyright litigators as to the feasibility of copyright as an effective form of legal protection for computer software and other forms of intellectual property embodied in new technologies.[76] Some critics blame Congress for the current con-

69. Friedman & Kremen, *The Selection and Use of Technical Experts in Computer Litigation*, 5 COMPUTER LAW. 1 (June 1988).

70. DAVIS, *supra* note 2, at 317-18.

71. 17 U.S.C. § 505 (1989).

72. *Id.*; Cloth v. Hyman, 146 F.Supp. 185 (S.D.N.Y. 1956). *See also* Morser v. Benger Products Co., 283 F. Supp. 926 (S.D.N.Y. 1968). *But see* Eisenschmil v. Facett Publications, Inc., 246 F.2d 598 (7th Cir. 1957), *cert. denied,* 355 U.S. 907 (1957).

73. *See* DAVIS, *supra* note 2, at 319.

74. Menell, *supra* note 4, at 1340.

75. *Id.*

76. *See* Rodau, *supra* note 28; Conley & Bryan, *supra* note 3; Kaufman, *supra* note 4.

fusion because of its simplistic approach to legislating copyright laws for a technology as complex and problematic as computer software.[77] Still other observers criticize the legal system, in general, as incapable of handling disputes over software copyright protection.[78] It is this latter criticism which is exemplified in the recent *NEC Corp. v. Intel Corp.* decision.

B. Case In Point: *NEC Corp. v. Intel Corp.*

Intel Corporation ("Intel") is the world's leading manufacturer of microprocessors, the central chip which operates the internal functions of a personal computer.[79] NEC Corporation ("NEC") is a large Japanese electronics manufacturer which owns a California-based subsidiary that produces microprocessors in competition with Intel.[80] In 1979, Intel began licensing several of its competitors to use, manufacture and sell its 8086/88 series microprocessors.[81] The 8086/88 series contained copyrighted microcode that consisted of a set of basic instructions which operate the electronic circuitry within the microprocessor.[82] Between 1981 and 1984, Intel issued similar licenses to NEC, Fujitsu and Mitsubishi.[83]

In developing its own series of microprocessers, NEC used Intel's 8086/88 microcode as a model to create a compatible microprocessor which could be used with Intel's licensed products.[84] In 1984, NEC introduced its V20/V30 series of compatible microprocessors.[85] Intel accused NEC of copying its 8086/88 microcodes in the production of its V-series microprocessors.[86] Anticipating litigation, NEC took the offensive and filed suit against Intel in late 1984 seeking a judicial declaration that Intel's copyrights for its 8086/88 microprocessors were invalid and that, in any event, NEC's V-series microprocessors did not infringe Intel's 8086/88 microprocessor copyrights.[87] In response, Intel filed counterclaims against NEC for infringement.[88]

77. *See* Menell, *supra* note 4. *See also* Chandler, *supra* note 2.

78. *See* Chandler, *supra* note 2. *See also* Comment, *supra* note 16.

79. Pollack, *Intel Loses Copyright Case to NEC*, N.Y. Times, Feb. 8, 1989, at D1, col. 6.

80. Frankel, *Big Suits*, THE AM. LAW., Apr. 1989, at 23.

81. NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1181. Between 1979 and 1981, Intel granted licenses to Harris, Matra-Harris and Siemens.

82. *Id.* at 1178.

83. *Id.* at 1181.

84. *Id.* at 1189. Intel licensed NEC to use the 8086/88 microprocessor hardware which was protected by patent. NEC created a microcode which could operate within this licensed hardware.

85. Glenn, *New Arrival; NEC Corp. v. Intel Corp. Rules of the Game*, REV. PUBLICATIONS CO., Apr. 1989, vol. 7, no. 4, at 30.

86. *Id.*

87. NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1177.

88. *Id.*

The litigation continued for approximately four and one-half years. Initially, the case was assigned to Judge Ingram for determination. However, two years into the litigation, he disqualified himself from the case after NEC challenged his fitness on the grounds that a conflict of interest existed due to his ownership of a modest amount of Intel stock.[89] Prior to removing himself, Judge Ingram had made a preliminary ruling that Intel's 8086/88 microcode was subject to protection under the Copyright Act.[90] He had further ruled that Intel did not lose its copyright protection by its licensee's omission of copyright notice on publicly distributed copies of the microprocessors.[91] It was at this point that NEC played its ace and challenged Judge Ingram's fitness in order to set aside these damaging preliminary rulings by his disqualification. In early 1987, the case was reassigned to Judge William P. Gray.

In February 1989, after rehearing the case, Judge Gray rendered a decision addressing four primary issues: (1) whether Intel's 8086/88 microcode was subject to copyright protection under the Copyright Act; (2) whether Intel forfeited such protection by virtue of its licensees' omission of copyright notice on publicly distributed microprocessors; (3) whether NEC's V-series microcode infringed Intel's 8086/88 copyrights; and (4) whether NEC's V-series microprocessors were no more than improvements on its Intel-licensed products. In rendering his decision, Judge Gray produced an explicit and detailed record of his examination of the extensive evidence produced by NEC and Intel at trial. It is clear from this record that both parties undertook painstaking efforts to educate Judge Gray on the intricacies of microcode technology. NEC alone produced scores of demonstrative exhibits which ranged from the fundamental teachings of basic logic design and computer terminology to a series of "Highlighted Microcode Comparison Books," which provided NEC's version of the similarities and differences between the Intel microcode and the NEC clone.[92] Although an NEC attorney admitted that "even an expert would have trouble" understanding the information provided in these exhibits, NEC maintains that the color-highlighted comparison books "made it relatively simple for the judge to understand

89. Brandt & Gross, *The Uncertain Payoffs from Intel's Landmark Case*, BUS. WK., Feb. 20, 1989, at 35 ("[I]ngram belonged to an investment club that owned $80 worth of Intel stock in his name."); Groenwald, *NEC Corp. v. Intel Corp. Rules of the Game*, REV. PUBLICATIONS Co., April, 1989, vol. 7, no. 4, at 30 .

90. Brandt & Gross, *supra* note 89.

91. *Id.*

92. Derwin, *NEC v. Intel: The Scope of Copyright Protection*, COMPUTER LAW., March, 1989, at 1.

at a glance the range of similarities and differences contained in any given microroutine."[93]

With respect to the copyrightability of microcode, Judge Gray concluded that Intel's microprograms were proper subject matter for protection under the Copyright Act.[94] In coming to this determination, he relied primarily on the Third Circuit's decision in *Apple Computers, Inc. v. Franklin Computer Corp.* which held that a computer program is afforded copyright protection regardless of the medium in which it is expressed.[95] Judge Gray, however, also concluded that Intel had forfeited its copyright protection of the 8086/88 microprocessors by its failure to ensure that its licensees were affixing copyright notices on the microprocessors that were being publicly distributed.[96] This ruling was contrary to Judge Ingram's prior decision. In addition, Intel was found dilatory in its discovery of the omission and that it failed to take reasonable steps to add such notice once the omission was discovered.[97]

As to the issue of infringement, Intel had to establish that NEC had access to the copyrighted microcodes and that substantial similarities existed between the Intel 8086/88 and NEC's V-series microprograms.[98]

93. *Id.*

94. NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1180.

95. *Id.* NEC argued that "Intel's microcode is a defining element of the computer itself," and therefore not a "computer program" as defined within the Copyright Act. However, Judge Gray dismissed this as a "semi-semantical argument" by NEC and concluded that microcode comes within the statutory definition as "a set of statements or instructions to be used . . . in a computer." *Id.* at 1179.

96. *Id.* at 1180. (Approximately 10.6% of the 28 million microcode copies distributed to the public between May 1978 and May 1986 did not contain copyright notice. Judge Gray found this amount to exceed the "relatively small number" of copies that may be exempted from the notice requirement.) It would appear, however, that such notice was required for the benefit of the public purchasing the copyrighted products and unaware of Intel's proprietary interest. NEC, on the other hand, had actual knowledge of Intel's copyright from the licensing agreement. NEC should therefore not have been permitted to take advantage of Intel's failure to ensure that notice was affixed to the distributed products.

97. *Id.* at 1181-83. Judge Gray found that Intel displayed a "lack of active concern" in protecting its 8086/88 microcode copyrights. Although Intel's initial licensing agreements provided that copyright notice would be placed on its licensed products upon written request, Intel made no such request until April 1985, several months after litigation began. Intel's licensing agreements with NEC, Fujitsu and Mitsubishi contained absolutely no provision requiring copyright notice. Intel did not inquire as to NEC's notice procedures until early September 1984. Intel did not actively investigate this matter until February 1985, when it purchased Fujitsu and NEC products on the open market for the purpose of checking for copyright notice as part of its preparation for this litigation. Once Intel discovered that no copyright notice was being placed on its licensed products, Intel sent a letter to Fujitsu stating that its license required notice to be placed on its products. Intel sent stickers bearing its copyright notice to Fujitsu requesting that it affix them to the licensed devices. However, Intel failed to make any follow-up inquiries whether Fujitsu was affixing the stickers. Judge Gray found that this corrective action was insufficient to save Intel's copyright protection.

98. *Id.* at 1183. *See supra* notes 56-57 and accompanying text.

Since NEC had been licensed to use the copyrighted Intel 8086/88 microcode, NEC did not dispute that it had access to the protected microprogram.[99] In determining whether substantial similarities between the two microprograms existed, Judge Gray explicitly applied the "ordinary observer" standard generally used in literary copyright cases.[100] Based on his examination of the two programs, as well as the conflicting expert testimony and the exhibits presented at trial, Judge Gray ruled that "the ordinary observer, considering the accused microcode as a whole, would not recognize it as having been taken from the copyrighted source."[101]

However, in examining the microprograms, Judge Gray did discover that several of the shorter microroutines contained in the NEC microcodes were substantially similar to Intel's 8086/88 codes and warranted further examination as to evidence of actual copying by NEC.[102] Intel claimed that NEC's programmer must have copied the Intel microcode because he was relatively inexperienced in microprogramming, worked under an arduous time schedule, and failed to adequately document his work as compared to other programs he had developed.[103] Finding the testimony of the NEC programmer extremely credible, however, Judge Gray concluded that he had not copied the Intel microcode.[104] This conclusion was in direct contradiction to the NEC programmer's testimonial admission at trial that he had previously disassembled the Intel microcode and had been influenced by this experience in creating the V-series microcode.[105] Judge Gray dismissed this evidence on the grounds that "[s]uch experience inevitably became part of his expertise, and the acquired knowledge of how [Intel's programmer] created instructions to be executed by the 8086/8088 may well have been a source of ideas that [NEC's programmer] utilized in preparing a microcode for the [V-series]," and did not compel a contrary conclusion.[106]

In further support of its direct copying argument, Intel introduced evidence that the first version of NEC's microprogram duplicated entire

99. *Id.*

100. *Id.* at 1184. *See supra* notes 58-61 and accompanying text.

101. *Id.*

102. *Id.*

103. *Id.*

104. *Id.* At trial, an interpreter was required to translate the testimony of the NEC programmer. It is questionable whether Judge Gray should have placed such weight on the NEC programmer's credibility when Judge Gray had to rely heavily upon the interpreter's skill in conveying the witness' responses to questioning.

105. *Id.*

106. *Id.*

segments of Intel's copyrighted code.[107] Judge Gray ruled, however, that even assuming NEC's programmer directly copied the Intel microcode he had previously disassembled, NEC's final version of the microprogram was sufficiently altered so that it did not infringe Intel's copyright.[108] Judge Gray explicitly applied the well-established copyright principle used in literary cases which states that "[c]opying deleted or so disguised as to be unrecognizable is not copying."[109] In so ruling, Judge Gray effectively withdrew the copyright protection he had earlier afforded microcodes under the Copyright Act. Essentially, Judge Gray extended copyright protection to microcodes with one hand while stripping that protection with the other hand by providing a means for direct copying by subsequent alteration.

Contending that the similarities between the two microcodes were a result of the limited ways a microcode could be written to produce the desired result, NEC introduced an imaginative piece of demonstrative evidence.[110] NEC performed a "clean room" cloning experiment for the court whereby isolated engineers disassembled Intel's 8086/88 microcode into written specifications. Programmers, previously unexposed to the copyrighted information, were then given these written specifications and instructed to create a new microcode that would perform the same functions as required in the licensed Intel hardware. The microcode created by this method was strikingly similar to the Intel 8086/88 microcode.[111] Judge Gray found the "clean room" microcode "compelling evidence" that the similarities between the NEC and Intel microcodes were due to technical and hardware constraints, not copying.[112] In light of these constraints, Judge Gray held that since the "shorter, simpler microroutines can be expressed in only a few limited ways,"[113] they "may be protected only against virtually identical copying."[114] Based upon the evidence, Judge Gray concluded that "NEC had properly used the underlying ideas, without virtually identically copying their limited expression."[115]

107. *Id.* at 1185. The NEC V/20 microcode also contained a "patch" similar to the Intel 8088 microcode, used by Intel to overcome an error in the 8088 microprocessor hardware. Intel contended that there was no independent reason for NEC to have included the "patch" and that this clearly evidenced copying. Judge Gray, however, ruled that NEC was licensed to use the 8088 hardware design and was therefore required to write a similar "patch" that would run in the V/20 hardware based on the 8088 design. *Id.*

108. *Id.* at 1186-87.

109. *Id.*

110. *Id.* at 1186.

111. *Id.*

112. *Id.* at 1188.

113. *Id.* at 1189.

114. *Id.*

115. *Id.*

Although Judge Gray's acceptance of the "clean room" microcode as compelling evidence that NEC did not copy Intel's copyrighted microcode appears to be a validation of the reverse-engineering technique for software cloning, his decision has an even greater impact. NEC's programmer was not a "virgin" microprogrammer, previously unexposed to the copyrighted material from which he based his independent design of the V-series compatible microcode.[116] Rather, the NEC programmer had disassembled Intel's microcode in his preparation for writing a program that would perform the same functions as the Intel copyrighted version.[117] In ruling that this procedure did not constitute infringement, Judge Gray appears to have also validated a "dirty room" method of cloning copyrighted computer programs.[118]

Ironically, by the time the decision was ultimately rendered, it did not have a significant impact on either NEC or Intel. At the time the suit was initiated, NEC had abandoned its production of V-series microprocessors because it believed the cloning process was fraught with difficulty and because the V-series simply was not compatible with Intel's newer products.[119] The Intel 8086/88 was also displaced by new generations of microcodes.[120] Currently, the 8086/88 represents less than 1% of Intel's approximately $30 million in annual revenues.[121]

At the time of publication, neither Intel nor NEC have filed an appeal. Intel has indicated, however, that it is considering the possibility of such an option.[122] Should an appeal be taken, this protracted litigation could continue well into the mid-1990s without a final resolution. Although Judge Gray's decision presently forecloses recovery of damages by Intel against NEC, the Ninth Circuit could overrule the decision requiring NEC to pay Intel actual damages as well as any profits NEC realized by its unauthorized use of the Intel microcodes.[123]

II
Informal, Private Arbitration: Offering the Olive Branch

At the same time the NEC/Intel litigation was heating up in federal court, IBM and Fujitsu commenced private arbitration proceedings to

116. *Id.* at 1184.
117. *Id.*
118. *Id.*
119. Sieg, *supra* note 44.
120. Pollack, *supra* note 79.
121. *Id.*
122. *Id.*
123. *See supra* notes 39-43 and accompanying text.

resolve licensing and copyright infringement disputes similar to those involved in the NEC/Intel lawsuit.

A. The IBM/Fujitsu Controversy

International Business Machines Corporation ("IBM") is the world's largest computer company, controlling approximately 70% of the world market in mainframe computers.[124] Fujitsu Limited ("Fujitsu") ranks fourth in the world and is Japan's largest computer manufacturer.[125] Among its computer products, Fujitsu develops and markets IBM-compatible mainframe computers and related software.[126] Both firms compete in the world market for mainframe computers and related products in Asia, Australia, New Zealand, Europe, and Brazil.[127]

In the early 1960s, IBM developed a new series of mainframe computers known as the System 360 which contained operating system software that could run a great variety of application programs originally designed for other IBM computers.[128] The System 360 allowed consumers to expand and modify their existing computer systems without having to invest in costly new application programs.[129] Once consumers committed themselves to the System 360, IBM was guaranteed future sales of mainframe computers and related products since IBM was the only manufacturer that offered compatible products. In effect, IBM owned a legal monopoly created by its new operating system software.[130]

By the time Fujitsu entered the computer mainframe market, the IBM/System 360 had achieved widespread acceptance with mainframe computer users. The majority of these users were locked into the IBM environment by making extensive investment in application programs designed to run in conjunction with the System 360 operating system software.[131] In order to effectively compete with IBM, Fujitsu had to develop an operating system that could run the same application programs as the IBM system.[132] In 1976, Fujitsu marketed its first IBM-compatible mainframe computer system.[133]

124. L.A. Times, Sept. 16, 1987, Part 4, at 2, col. 1; International Business Machines Corp. v. Fujitsu Ltd., No. 13T-117-0636-85, Am. Arb. Assoc. Commercial Arb. Tribunal Opinion, 1, Sept. 15, 1987 (R. Mnookin and J. Jones) [hereinafter IBM/Fujitsu Opinion].

125. L.A. Times, *supra* note 124; IBM/Fujitsu Opinion, *supra* note 124, at 1.

126. Coy, *supra* note 6.

127. *Id.*

128. IBM/Fujitsu Opinion, *supra* note 124, at 4.

129. *Id.*

130. *See* Comment, *supra* note 16.

131. IBM/Fujitsu Opinion, *supra* note 124, at 5.

132. *See* Comment, *supra* note 16.

133. IBM/Fujitsu Opinion, *supra* note 124, at 5.

At the time, IBM did not claim any copyright protection since it was unclear whether operating system software was protected by the existing copyright laws.[134] Following the passage of the Copyright Act of 1976, IBM began registering copyrights for its new software.[135] By that time, however, Fujitsu had already committed itself to offering IBM-compatible operating systems.[136] Subsequently, after Congress passed the Software Protection Act of 1982, which specifically extended copyright protection to computer programs, IBM accused Fujitsu of violating its operating system copyrights.[137]

In an attempt to resolve their disputes, IBM and Fujitsu entered a settlement agreement in 1983 ("1983 Settlement Agreement").[138] Pursuant to the 1983 Settlement Agreement, IBM agreed to waive all its claims against Fujitsu for copyright infringement in consideration for Fujitsu's payment of an estimated $65 million in licensing fees.[139] This payment was based on Fujitsu's previous distribution and use of certain Fujitsu programs containing portions of IBM copyrighted material. Fujitsu also agreed to pay over $406 million in semi-annual licensing fees for the future use of these "designated" programs.[140] The 1983 Settlement Agreement also provided for the exchange of certain external programming information between the parties. Although a separate "External Information" Agreement was drawn-up and executed, the exhibits listing the programs to be exchanged, as well as the licensing fee schedule, were never completed.[141]

Due to "fundamental ambiguities and inadequacies" in the 1983 Settlement Agreement and the incomplete External Information Agreement, new disputes arose between the parties.[142] Although they struggled for several months to negotiate a resolution, IBM and Fujitsu were unable to come to any agreement.[143] Consequently, in June of 1985, IBM filed a demand for arbitration with the American Arbitration Association (AAA) alleging that Fujitsu had breached its obligations under the 1983 Settlement Agreement and violated IBM's operating sys-

134. *Id.* at 5-6.

135. *Id.* at 6.

136. *Id.*

137. *Id. See also* Coy, *supra* note 6.

138. IBM/Fujitsu Opinion, *supra* note 124, at 6.

139. American Arbitration Association Press Release, Nov. 29, 1989 [hereinafter AAA Press Release].

140. *Id.*

141. IBM/Fujitsu Opinion, *supra* note 124, at 7.

142. *Id.* at 7-8.

143. *Id.* at 8.

tem copyrights.[144] Specifically, IBM alleged that Fujitsu had "systematically and pervasively" copied IBM programming material in violation of its copyrights of operating systems for its mainframe computers.[145] IBM alleged that Fujitsu failed to develop its own programming material in compliance with those rights and that it did not comply with the agreed-upon protective procedures established by the 1983 Settlement Agreement.[146] IBM further alleged that Fujitsu, in breach of the 1983 Settlement Agreement, failed to provide adequate safeguards for the use of the designated IBM programming material and obstructed IBM's review efforts.[147]

In answer to these allegations, Fujitsu maintained that its use of IBM programming material did not violate the 1983 Settlement Agreement or IBM's intellectual property rights.[148] Fujitsu based its defense on several alternative grounds. First, Fujitsu contended that the IBM operating system programs at issue did not constitute protected expression as defined by the Copyright Act. Second, Fujitsu argued that such IBM programs were in the public domain and therefore not protected by copyright law since IBM had publicly distributed uncopyrighted versions of the System 360 programs. Third, Fujitsu argued that its use of "external information" was within the parameters intended by the 1983 Settlement Agreement. Fourth, Fujitsu contended that the 1983 Settlement Agreement provided Fujitsu with complete immunity as to its use of the IBM copyrighted material. Fifth, Fujitsu argued that the protective procedures provided by the 1983 Settlement Agreement authorized Fujitsu's research on high level architectural design, and sixth, that Fujitsu only used standard programming techniques in the research and development of its software.[149]

Finally, Fujitsu insisted that certain portions of the IBM operating system software had become "industry standards" and that, as such, Fujitsu had the right to use it in the development of IBM-compatibles in order to effectively compete in the mainframe computer market.[150] Fujitsu claimed that IBM had violated the antitrust laws by deliberately pursuing a strategy to monopolize the mainframe computer market,

144. The 1983 Settlement Agreement provided that any disputes would be resolved through arbitration. *Id. See also* Sanger, *Fight Ends for IBM and Fujitsu*, N.Y. Times, Sept. 16, 1987, at D1, col. 6.

145. IBM/Fujitsu Opinion, *supra* note 124, at 8.

146. *Id.* at 8-9.

147. *Id.* at 9.

148. *Id.*

149. *Id.*

150. *Id.* at 10.

thereby effectively locking consumers into the IBM system.[151] IBM resisted these antitrust charges on the grounds that the need for "compatibility" does not entitle IBM's competitors to copy proprietary information.[152] In its support, IBM cited numerous decisions in which the courts consistently ruled in favor of IBM on similar antitrust charges and claims of entitlement based on the alleged need for compatibility.[153] IBM further argued that, in any event, the information which Fujitsu used was clearly not considered "indispensable" to the design of IBM-compatibles.[154] IBM contended that, due to Fujitsu's history of violating IBM's proprietary rights, IBM should no longer be compelled by any contractual obligation to provide Fujitsu with additional external information.[155]

B. The IBM/Fujitsu Arbitration

In December 1985, IBM and Fujitsu selected two arbitrators to resolve their disputes: Robert H. Mnookin, a Stanford Law School professor specializing in dispute resolution, and John J. Jones, a retired executive from Norfolk Southern Corporation and a computer systems expert.[156] At the outset, the arbitrators announced that their goal was to avoid becoming entangled in an "extensive adjudicatory factfinding process."[157] Accordingly, the arbitrators refused to engage in a program by program comparison to determine whether Fujitsu had actually violated any of IBM's intellectual property rights. Rather, they focused on resolving the parties' ongoing disputes with respect to the 1983 Settlement Agreement and Fujitsu's continuing use of IBM programming material in its software development.[158]

The arbitration proceedings consisted of four key stages: (1) hearings on procedural claims; (2) "responsible executives" meetings; (3) hearings on summary judgment motions; and (4) mediation of new IBM-Fujitsu agreements. At the first stage, the arbitrators disposed of several

151. *Id.*

152. *Id.*

153. *Id.*

154. *Id.*

155. *Id.* at 11.

156. AAA Press Release, *supra* note 139. Initially, the arbitration panel consisted of three members: an IBM-appointed arbitrator (Jones), a Fujitsu-appointed arbitrator (Mnookin), and a third arbitrator appointed by the two party-appointed arbitrators. However, by written agreement and stipulation, both IBM and Fujitsu agreed that the two party-appointed members of the panel would serve as "neutral" arbitrators. Consequently, the third arbitrator resigned at that time. IBM/Fujitsu Opinion, *supra* note 124, at n.3.

157. IBM/Fujitsu Opinion, *supra* note 124, at 11.

158. *Id.*

procedural claims regarding jurisdiction and ripeness.[159] During the "responsible executives" meetings, the parties briefed and argued their positions before the arbitrators and a panel of select IBM and Fujitsu executives concerning the nature of Fujitsu's software development procedures and whether such procedures violated IBM's rights under the 1983 Settlement Agreement. As expected, the parties took widely divergent positions and were unable to resolve their fundamental disputes. They did, however, agree on the identification of several "designated" programs that were intended to be covered under the External Information Agreement.[160] In these meetings, Fujitsu also disclosed the methods by which it used IBM programming information to develop its compatible operating system software and the procedures it used to protect IBM's copyrights.[161]

At the hearings on summary judgment motions, both parties filed briefs regarding the copyright claims of IBM's MVS Version 1.3 operating system, the legitimacy of Fujitsu's software development process, and the nature and extent of each parties' obligations to exchange information under the 1983 Settlement Agreement.[162] IBM also filed a summary judgment motion attacking Fujitsu's use of certain IBM programs released after 1983 and a motion claiming it was entitled to treble damages under the 1983 Settlement Agreement.[163] Conversely, Fujitsu filed summary judgment motions claiming that Japanese, not U.S., copyright law applied and that IBM had violated its direct licensing obligations under the 1983 Settlement Agreement.[164]

The arbitrators granted one of Fujitsu's motions, finding that IBM had breached its direct licensing obligations under the 1983 Settlement Agreement.[165] However, the arbitrators specifically refused to consider any motions concerning the scope of IBM's copyright protection.[166] The arbitators believed that the legal and factual issues involved in reaching such a determination were so entangled that it could only be made in the context of a dispute concerning a specific program.[167] They did, how-

159. *Id.* at 12-13.

160. *Id.* at 13-14.

161. *Id.* at 14.

162. *Id.* at 14-15.

163. *Id.*

164. *Id.* Although the 1983 Settlement Agreement provided that any disputes would be subject to arbitration, it did not specify whether the intellectual property laws of Japan or the United States would apply. By stipulation, Fujitsu agreed to submit all claims to the jurisdiction of the American Arbitration Association. However, this did not foreclose the application of Japanese law to the dispute by the American Arbitrators.

165. *Id.* at 15.

166. *Id.*

167. *Id.* at n.19.

ever, order an accounting by Fujitsu with respect to the revenues derived from all programs which Fujitsu considered to be covered by the 1983 Settlement Agreement.[168]

It was not until the mediation stage that IBM and Fujitsu were finally able to arrive at a comprehensive resolution of their disputes, executing two new substantive agreements.[169] The first of these agreements was executed in December 1986 (the "1986 Agreement") and resolved the parties' disputes as to which programs were "designated" for use by Fujitsu under the 1983 Settlement Agreement.[170] Pursuant to the 1986 Agreement, IBM granted Fujitsu a "paid-up" license covering its past use of the designated programs, as well as hundreds of additional programs.[171] In return, Fujitsu agreed to pay a substantial licensing fee of approximately $400 million.[172] The 1986 Agreement settled IBM's copyright infringement claims as to hundreds of Fujitsu programs as well as Fujitsu's past use of IBM programming material in the development of IBM-compatibles.[173]

The second agreement was executed in February 1987 (the "Washington Agreement"). It settled all of the remaining disputes between IBM and Fujitsu and provided a framework for enforcing the protective procedures for copyrighted programming materials established under the earlier 1983 Settlement Agreement.[174] Pursuant to the Washington Agreement, Fujitsu agreed to pay an annual "access" fee, to be determined by the arbitrators, for the future right to use the designated programs containing IBM programming.[175] This supplanted the previous 1983 licensing agreement between the parties.[176] In addition, each party

168. IBM/Fujitsu Opinion, *supra* note 124, at 15.

169. IBM and Fujitsu also executed an agreement which provided that any further disputes between the parties arising from the order or the previous agreements would be submitted to arbitration by Mnookin and Jones. *Id.* at n.20.

170. *Id.* at 16.

171. *Id.* In total, the paid-up license covered 903 programs. *Id.*

172. AAA Press Release, *supra* note 139. Fujitsu received a credit of about $33.8 million to be applied toward the paid-up license for overpayments made to IBM under the 1983 Settlement Agreement. Fujitsu also received credit of approximately $124.8 million toward the paid-up license payments made between 1983 and 1987. In total, Fujitsu will have paid IBM slightly over about $833.2 million for its use of the designated programs. Since Fujitsu has already paid a substantial portion of this amount, it will only be required to pay to IBM a balance of approximately $237.2 million. *Id.*

173. IBM/Fujitsu Opinion, *supra* note 124, at 16.

174. *Id.* at n.20.

175. AAA Press Release, *supra* note 139; IBM/Fujitsu Opinion, *supra* note 124, at 17. "In 1989, Fujitsu will pay between $25,671,000 and $51,342,000 depending on the extent of Fujitsu's access." AAA Press Release, *supra* note 139.

176. IBM/Fujitsu Opinion, *supra* note 124, at 17.

agreed to license its respective operating systems software for use in the other's mainframe computer hardware.[177]

The Washington Agreement further provided for the establishment of a "Secured Facility" regime to allow controlled use of programming material by both parties in their software development while protecting their respective intellectual property rights.[178] Due to the parties' inability to agree on the details of the Secured Facility regime, the arbitrators issued an order in September 1987, setting forth the regime's procedural requirements.[179] The Secured Facility regime was designed to accomplish four basic objectives: (1) adequate compensation for access to proprietary information; (2) independent monitoring by a neutral expert for compliance with the arbitrator's decision; (3) immunity from challenge by the other party; and (4) a limited period of time in which to examine the other party's programming information.[180] This regime was intended as a preventive approach to dispute resolution by setting the parameters for the exchange of information while implementing appropriate safeguards to avoid misappropriation of any proprietary information.[181]

The most remarkable aspect of the Washington Agreement is its extensive grant of authority to the arbitrators to define the intellectual property rights that otherwise might not be protected under the existing copyright laws, and to resolve any disputes which might arise between the parties in the future. Essentially, the Washington Agreement "empowers the Arbitrators to create a coerced license, to determine the information covered by such license and to specify the price and enforcement terms," during the next five to ten years.[182] The arbitrators have continuing jurisdiction over all disputes between IBM and Fujitsu well into the year 2002.[183]

III
The IBM/Fujitsu Arbitration and the NEC/Intel Litigation Compared

Private arbitration is a particularly attractive means of dispute resolution in the context of software copyright conflicts because of its infor-

177. *Id.* at 17-18.

178. *Id.* at 18. To date, only Fujitsu has established a secured facility to evaluate IBM's software although IBM also has the same right to review Fujitsu programs.

179. International Business Machines Corp. v. Fujitsu Limited, No. 13T-117-0636-85, Am. Arb. Assoc. Commercial Arb. Order, Sept. 15, 1987 (R. Mnookin and J. Jones) [hereinafter IBM/Fujitsu Order].

180. IBM/Fujitsu Opinion, *supra* note 124, at 25-26.

181. *Id.* at 22.

182. *Id.* at 18.

183. AAA Press Release, *supra* note 139.

mal and pliable characteristics. It has no set, definite process, and the procedure itself is inherently flexible because it allows the parties to design their own resolution procedure to fit the particular controversy.[184] The parties may provide for only limited discovery and may even forego the perfunctory law and motion process of the legal system altogether.[185] In addition, the arbitrators are not bound by any legal precedent. They are not required to apply the strict exclusionary rules of evidence and may be strongly influenced by the equitable merits of each party's case.[186] Because they are not constrained by substantive or procedural rules, the arbitrators possess the authority to define the legal rights of the parties and can fashion remedies that specifically address the issues which confront them.[187]

The form of arbitration employed by IBM and Fujitsu in resolving their licensing and copyright disputes was voluntary, combining both formal and informal proceedings. Pursuant to their 1983 Settlement Agreement, IBM and Fujitsu had agreed to submit their disputes to arbitration prior to any controversy arising between the parties.[188] During the arbitration, formal hearings were conducted, dispensing with procedural claims and summary judgment motions.[189] Private informal meetings were also held between "responsible executives" of IBM and Fujitsu in an attempt to negotiate a final resolution.[190] The most successful stage of these proceedings occurred during the intense negotiations which were mediated by the arbitrators.[191] These mediated negotiations resulted in the execution of new comprehensive agreements structured in a manner which permit IBM and Fujitsu to maintain an ongoing business relationship while adequately protecting their respective intellectual property rights.[192]

By combining formal and informal procedures, IBM and Fujitsu created a "hybrid" form of arbitration, thereby escaping arduous courtroom formalities while retaining a structured environment. They were

184. *See* HANCOCK, CORPORATE COUNSEL'S GUIDE TO COMMERCIAL ARBITRATION, ALTERNATIVE DISPUTE RESOLUTION TECHNIQUES 2.001 (1989); GOLDBERG, A LAWYER'S GUIDE TO COMMERCIAL ARBITRATION (1979); HARTER, POINTS ON A CONTINUUM: DISPUTE RESOLUTION PROCEDURES AND THE ADMINISTRATIVE PROCESS, FEDERAL AGENCY USE OF ALTERNATIVE MEANS OF DISPUTE RESOLUTION 311 (1986).

185. *See* GOLDBERG, *supra* note 184.

186. *Id.*

187. *Id.*

188. IBM/Fujitsu Opinion, *supra* note 124, at 1 & nn.1,2.

189. *Id.* at 12-15.

190. *Id.* at 13.

191. *Id.* at 16.

192. *See* Nakajima, *IBM-Fujitsu Settlement Affects Global Industry,* The Nihon Keizai Shimbun Japan Economic J., Dec. 10, 1988, at 4.

able to produce an atmosphere where they could informally negotiate their claims yet benefit from the guidance of the arbitrators acting as expert mediators. The principle of cooperation and the objective of settlement were constantly emphasized throughout the proceedings. The flexibility of the arbitration environment permitted these underlying policies to thrive.

In contrast, the trial and pre-trial proceedings of the NEC/Intel litigation exemplified the adversarial system at its worst. The two parties pitted legions of legal and computer experts against each other, engaged in exhaustive discovery, and flooded the courtroom with an astounding volume of technical exhibits and legal briefs.[193] Cumulatively, both sides expended millions of dollars in attorneys' fees and computer expert fees while the microcodes at issue became antiquated.[194] Although the trial consumed only eighteen courtroom days, the actual litigation was protracted over a period of four and one-half years.[195] NEC's challenge to Judge Ingram's fitness is only one example of the procedural maneuvers by which a litigant can delay the trial in such a complicated case. If appeals are taken by either party, final resolution of this case cannot be expected before the mid-1990s.

IBM and Fujitsu were not obliged to engage in the exhaustive and expensive discovery process which Intel and NEC underwent.[196] Additionally, the parties will not be forced to bear the cost of an extensive appellate procedure similar to that which Intel and NEC will probably be subjected. However, it would be improper to overestimate or overgeneralize the cost savings of the IBM/Fujitsu arbitration. Similar to Intel and NEC, they too retained expert legal counsel and computer consultants to marshal the facts, organize and analyze the documents, and interview witnesses in preparation for the arbitration hearings.[197] In fact, IBM and Fujitsu engaged in several educational sessions in which both parties briefed and argued their positions to the arbitrators and selected "responsible executives."[198] They also produced numerous legal briefs and exhibits in support of their procedural claims and summary judgment motions.[199]

In comparison to the NEC/Intel litigation, however, the IBM/Fujitsu arbitration was a relatively expedient process. In the context of

193. *See* Derwin, *supra* note 92, at 4-5.

194. *See* Brandt & Gross, *supra* note 89.

195. Pollack, *supra* note 79.

196. IBM/Fujitsu Opinion, *supra* note 124, at 11 ("It has been the goal of the panel to avoid becoming engulfed in an extensive adjudicative fact-finding process.").

197. *See id.* at 12.

198. *Id.* at 13.

199. *Id.* at 14.

computer copyright, this is very appealing since obsolescence is endemic to computer technology and the money spent in litigating an infringement suit tends to dwarf the actual investment made in the software product.[200] The NEC/Intel litigation continued so long that the actual microcodes at issue were largely displaced by new generations of microchips by the time the decision was finally rendered. The disputed designs today represent only 1% of Intel's $2.9 billion in annual revenues.[201] Moreover, NEC discontinued its cloning process of the Intel microcode at the outset of the litigation because of its expense and the fact that the microprograms produced were ultimately incompatible with Intel's new generation of software products.[202] The IBM/Fujitsu arbitration, on the other hand, concluded within nineteen months after its commencement and the parties are still engaged in a mutually beneficial exchange of information. After such a bitter legal battle, which will probably continue on appeal, it is unlikely that Intel and NEC will engage in any business dealings with each other in the near future.

Another advantage to the selection of commercial arbitration by IBM and Fujitsu was the privacy of the resolution process. Typically, the decision of an arbitration panel consists of an award which makes no further elaboration on the facts of the dispute or the individual issues involved.[203] In selecting arbitration, IBM and Fujitsu explicitly provided that all information concerning the arbitration and settlement agreements would be kept confidential.[204] Pursuant to orders of the arbitrators, the parties and their counsel are strictly prohibited from making any public speculation about the impact of the decision and may not disclose any additional information concerning the proceedings or the dispute.[205] Although the IBM/Fujitsu Opinion and Order provide a relatively thorough discussion of the dispute and its resolution, it does not disclose any detailed information concerning the software programs involved or the testimony and exhibits presented at the hearings.[206] In the NEC/Intel litigation, however, Judge Gray was obliged to set forth a complete and detailed record of all bases upon which he made his deci-

200. *See supra* notes 44-46 and accompanying text.

201. Brandt & Gross, *supra* note 89.

202. Sieg, *supra* note 44.

203. GOLDBERG, *supra* note 184, at 63, 66.

204. IBM/Fujitsu Opinion, *supra* note 124, at 28.

205. AAA Press Release, *supra* note 139. The IBM/Fujitsu Opinion further states that the "[a]rbitrators are responsible for enforcing the confidentiality rule. This is an appropriate time to disclose to the public the Order and its background. The Arbitrators intend to make further disclosures at appropriate times in the future. Meanwhile, the parties and their counsel remain obligated to make no disclosure concerning the arbitration proceedings." IBM/Fujitsu Opinion, *supra* note 124, at 28.

206. IBM/Fujitsu Opinion, *supra* note 124, at 28.

sion.[207] Moreover, all of the information disclosed during the trial and pre-trial proceedings is considered to fall within the public domain and is therefore available to anyone upon request.[208]

By utilizing the arbitration process, IBM and Fujitsu were also able to select the arbitrators who decided their case. In doing so, they chose individuals not only in whom they had confidence but who possessed the requisite technical and legal expertise to make a knowledgeable decision in the context of a complex computer copyright dispute. Although IBM and Fujitsu produced numerous legal briefs and exhibits during the arbitration, Mnookin and Jones were able to comprehend the technical aspects of the case and facilitate a speedy resolution because of their expertise in the fields of computer operating systems and dispute resolution. This allowed the dispute to be resolved on the merits as opposed to attending a lengthy technical tutorial of the factfinder.

In the NEC/Intel litigation, a considerable portion of time was spent educating Judge Gray as to the basics of computer design and terminology, as well as the intricacies of programming logic and software development.[209] Although Judge Gray's decision demonstrates a relative understanding of microprocessor technology, it seems unlikely that he understood the science of microcodes sufficiently to render an informed determination on whether NEC's microcode actually infringed Intel's copyrighted microprogram or whether the "clean room" reverse-engineering technique was a legitimate method of cloning copyrighted software.[210] Considering the complexity of microprogramming, it is difficult to believe that an individual unfamiliar with the basic terminology and logic design of computer programs can absorb the requisite technical expertise during litigation necessary to determine the issues with which Judge Gray was confronted.[211]

More importantly, even after Intel and NEC had tutored Judge Gray on the technology of microprogramming, he was nevertheless obliged to apply simplistic copyright principles which are inappropriate in the context of computer software.[212] Bound by legal precedent, Judge Gray made his determination that NEC's microprogram was not substantially similar to Intel's copyrighted version based on the "ordinary observer" standard.[213] Although the hypothetical "ordinary observer" may be able to detect copying in simple literary works, it is unlikely that

207. OEHMKE, COMMERCIAL ARBITRATION § 6:6 (1989).
208. *Id.*
209. NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1184.
210. *Id.*
211. *See* Conley & Bryan, *supra* note 3, at 78.
212. *Id.* at 109.
213. NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1184.

such a factfinder, particularly one unfamiliar with computer software, can detect copying by comparing competing programs that are written in object or source code.[214] Moreover, it seems inefficient to educate the factfinder as to the technology of programming and then compel him or her to apply a standard which assumes the factfinder is unfamiliar with the technical aspects of the copyrighted work. Additionally, Judge Gray applied the principle commonly used in literary copyright cases which holds that a copy that is substantially changed will avoid infringement.[215] Since programs can be altered quickly and easily, such a rule of law does not adequately protect the extensive investment that a firm makes in the research and development of a program, investment which is generally not expended in the creation of the traditional forms of literary works. Yet, Judge Gray rendered a decision based on these general copyright principles without even addressing in his written opinion the appropriateness of these standards to works embodied in high technology.[216]

Conversely, Mnookin and Jones were not bound by such legal precedent and proceeded to define the proprietary rights of IBM and Fujitsu in the subject software based on their expertise and the equitable merits of the case. They discarded the conventional copyright principles as improper in the software copyright context and addressed the practical aspects of the copyright and licensing issues before them. By creating their own definition of software copyright protection, Mnookin and Jones designed a remedy which fit the needs of both parties. Using their expertise, they devised the Secured Facility regime which protects the proprietary interests in the operating system software that otherwise may not have been afforded protection under the existing copyright laws. As a preventative approach, the regime sets up elaborate procedural safeguards for the use of proprietary information in the development of compatible software while simultaneously establishing a sophisticated mechanism for resolving outstanding conflicts between IBM and Fujitsu, thereby avoiding any future litigation. In doing so, the arbitrators created a framework by which the parties could engage in a beneficial exchange of information yet protect their respective intellectual property rights.

Unconstrained by either substantive or procedural laws, the arbitrators were also able to protect the public interest involved in the IBM/Fujitsu controversy. They established the Secured Facility regime with the intent of promoting competition in the mainframe data processing

214. *See* Conley & Bryan, *supra* note 3.
215. NEC Corp. v. Intel Corp., 10 U.S.P.Q. 2d (BNA) at 1186-87.
216. *Id.*

industry.[217] By allowing Fujitsu access to otherwise protected IBM programming information, Fujitsu can independently develop IBM-compatible software, thereby strengthening its ability to compete in the marketplace.[218] IBM can also develop new enhancements and improvements to its software products without the fear that Fujitsu will misappropriate such innovations and improvements. This competition will in turn provide consumers with a wider variety of software products from which to choose. As described by the arbitrators, consumers may assemble data processing systems which utilize products purchased from competing software firms in order to maximize performance and economy, while taking advantage of the unique capabilities offered by certain products outside their mainframe system.[219]

By their decision, the arbitrators also attempted to foster competition with respect to IBM-compatible mainframe hardware systems.[220] The Washington Agreement provides that IBM and Fujitsu will license their respective software products to be used in the other's hardware systems.[221] Previously, consumers were only permitted to use IBM software products in IBM hardware systems. The same restriction applied to the use of Fujitsu software products in its hardware.[222] Now, consumers may use both IBM and Fujitsu software products interchangeably with the hardware systems they have purchased from either firm.[223] The arbitrators intended for consumers to benefit from the "enhanced opportunity to purchase the most desirable hardware products that either company can offer."[224]

Pursuant to the Washington Agreement, the arbitrators' subsequent decisions will constitute the applicable intellectual property law between the two firms until the year 2002.[225] By providing arbitrators with such extensive power, IBM and Fujitsu circumvented the expense and futility of civil litigation. However, the parties in essence have also waived all the constitutional protections provided by discovery and appeal.[226] Of

217. IBM/Fujitsu Opinion, *supra* note 124, at 26.
218. *Id.*
219. *Id.* at 27.
220. *Id.*
221. *Id.* at 17-18.
222. *Id.* at 27.
223. *Id.*
224. *Id.* at 28.
225. AAA Press Release, *supra* note 139.
226. The waiver does not include those appeals to vacate or modify based upon abuse of discretion and fraud. For example, the provision of the U.S. Arbitration Act pertaining to judicial review is extremely limited:

> In either of the following cases the United States court in and for the district wherein the award was made may make an order vacating the award upon the application of any party to the arbitration —

course, parties may provide for extensive discovery to be a part of the arbitration procedure, but the loss of the right to appeal is an extreme, yet typical, characteristic of arbitration. With binding, non-appealable arbitration, the parties will be burdened with the decision of the arbitrators whether they agree with it or not. In the case of IBM and Fujitsu, the companies will not only be compelled to accept the final order in the present dispute, but any future determinations which the arbitrators conclude are necessary until the year 2002. Understandably, many computer firms may not wish to relinquish such power over their businesses to a panel of arbitrators and risk an unfavorable, non-appealable decision. However, it may be a greater business risk to elect litigation and the uncertanties of existing copyright law determined by an unpredictable and uninformed judge or jury.

Finally, arbitration of disputes involving intellectual property rights presents a particularly difficult problem in relation to its enforceability. It has been suggested that a fundamental conflict exists in placing controversies that concern public law in the hands of a private system of dispute resolution.[227] For instance, prior to 1989, the courts would not enforce arbitration agreements involving patents due to the overriding public interest concerning patent validity or infringement.[228] However, recent Supreme Court decisions in this area have consistently favored the enforcement of such arbitration agreements, even in such federally regulated areas as patents, antitrust, and securities laws.[229] Consistent with this trend, the Seventh Circuit recently held in *Saturday Evening Post Co. v. Kumbleseat Press, Inc.* that copyright disputes over validity and in-

(a) Where the award was procured by corruption, fraud, or undue means.

(b) Where there was evident partiality or corruption in the arbitrators, or either of them.

(c) Where the arbitrators were guilty of misconduct in refusing to postpone the hearing, upon sufficient cause shown, or in refusing to hear evidence pertinent and material to the controversy; or of any other misbehavior by which the rights of any party have been prejudiced.

(d) Where the arbitrators exceeded their powers, or so imperfectly executed them that a mutual, final, and definite award upon the subject matter submitted was not made.

(e) Where an award is vacated and the time within which the agreement required the award to be made has not expired the court may, in its discretion, direct a rehearing by the arbitrators.

9 U.S.C. § 10 (1987).

227. Shell, *The Role of Public Law in Private Dispute Resolution: Reflections on Shearson/American Express v. McMahon*, 26 AM. BUS. L.J. 397 (1988).

228. ORKIN, LEGAL ASPECTS OF ARBITRATION, ALTERNATIVE DISPUTE RESOLUTION TECHNIQUES 2.115 (1989).

229. *See, e.g.*, Mitsubishi Motors Corp. v. Soler Chrysler-Plymouth, Inc., 473 U.S. 614, 105 S.Ct. 3346 (1985); Shearson/American Express, Inc. v. McMahon, 482 U.S. 220, *reh'g denied*, 108 S.Ct. 31 (1987).

fringement are arbitrable.[230] Hence, arbitration agreements such as that involved in the IBM/Fujitsu controversy will most likely be enforceable.

IV
Conclusion

Current copyright law does not provide adequate legal safeguards to protect the intellectual property embodied in computer software. Although the copyright laws were intended to protect and encourage innovation, the uncertainty concerning the copyrightability of certain types of software and the threat of endless litigation have produced the opposite effect. Traditional dispute resolution by litigation has only exacerbated this problem. Litigation of such cases is extremely costly and takes years to reach a final conclusion. By that time, the software at issue is usually antiquated and no longer in use. Moreover, the issues involved in software copyright disputes are too complex and technical to be adequately explained to a judge and jury who are unfamiliar with the technology. In any event, the courts continue to apply general copyright principles which have little application in the context of high technology copyright disputes.

As an alternative means of dispute resolution, the imaginative method developed by IBM and Fujitsu in a final effort to settle their copyright claims has created a hybrid form of arbitration. By relinquishing extensive control over their businesses to the arbitrators, IBM and Fujitsu established a sophisticated mechanism to resolve any future conflict and forestall future litigation. The arbitrators were able to define the parameters of the intellectual property rights between the two firms and provide strict safeguards for the protection and enforcement of those rights.

Through private, commercial arbitration, large computer firms may design imaginative remedies to settle their legal claims while preserving business relationships and their intellectual property rights. Further, by using private, non-appealable arbitration, the costs of maintaining and protecting copyrights which accompany the creation of original computer programs will be meager compared to the staggering costs incurred by the litigation of such cases. Not only will the individual copyright holders benefit from the use of arbitration in computer software cases, but society as a whole will reap the value of cooperation between large computer firms by way of new innovations and reduced costs.

It will be a few years before it is determined whether the private arbitration approach utilized by IBM and Fujitsu is an effective means of

230. 816 F.2d 1191 (7th Cir. 1987).

dispute resolution for complex computer copyright cases. However, with the information available today and the poor history of traditional civil litigation, the hybrid method of providing extensive authority to carefully chosen and trusted arbitrators to resolve disputes appears to be the best method developed yet. Hopefully, the IBM/Fujitsu proceeding will be the precursor of a "clearer, cleaner structure" to protect the intellectual property rights embodied in computer software.[231]

231. AAA Press Release, *supra* note 139 (quoting Jones).